BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

1. Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division.
2. Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division.

TEST REPORTS

THIRD & PART BILL

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

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TEJUS
CONSULTANTS

No.TC/BBMP/BYT-PMC/497/21-22

Date:

To
The Executive Engineer
Byatarayanapura Division,
NH-7 Road, Bangalore – 560 092

Dear Sir

Sub: Improvements to roads and drains at Kogilu, Agrahara, Hegdenagar and surrounding area in Ward No 05 and 06 Byatarayanapura sub division Package-02

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **Third and Part bill** submitted by M/s. Benaka Developers and Projects Pvt Ltd towards the above said work and arrived at an amount of **1,18,12,589.60 /-(Rupees One Crore Eighteen Lakh Twelve Thousand Five Hundred Eighty Nine and Paise Sixty Only)** the work has been completed satisfactorily.

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

TEJUS CONSULTANTS

For Tejus Consultants
(Nischal M)

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

1. Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division

TEST REPORTS

THIRD & PART BILL

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
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Test Report on Cement

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	15-12-2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	104 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	442 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	7. mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	30.00%	25 % to 35

Note:
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3. Any Query regarding the report must be reported reported within 15days from the date of testing.
4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

TEJUS CONSULTANTS

Authorised Signatory

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TEJUS
CONSULTANTS

TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION
FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	PCC
Location/Source	Tirumenahalli Main Road	Date of Sampling	14-12-2021
Period of Soaking	24 hours	Date of Testing	15-12-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	656	662	644	
B	Weight of oven - dry sample gm.	648	654	636	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1687	1691	1680	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.656	2.659	2.661	2.658
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.235	1.223	1.258	1.239

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	PCC
Sample Location	Tirumenahalli Main Road	Date of Sampling	15-12-2021
		Date of Testing	15-12-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	216	216	7.20	92.80	90 - 100
2.36 mm	320	536	17.87	82.13	75 - 100
1.18 mm	415	951	31.70	68.30	55 - 90
0.600 mm	490	1441	48.03	51.97	35 -59
0.300 mm	756	2197	73.23	26.77	8-30
0.150 mm	630	2827	94.23	5.77	0 - 10
Pan	173	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	Tirumenahalli Main Road	**Date of Sampling**	14-12-2021
		Date of Testing	15-12-2021

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	80	80	2.67	97.33	95-100
20.00mm	1378	1458	48.60	51.40	30-70
10.00mm	968	2426	80.87	19.13	10-35
4.75mm	480	2906	96.87	3.13	0-5
Pan	94	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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TEJUS CONSULTANTS
Authorised Signatory

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CONSULTANTS

TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Name of Work	:	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Consultant	:	Tejus Consultants, Bangalore
Date of Testing	:	18-12-2021
Techinical Reference	:	IS 1786:2008, IS1608:2005, IS1599:1985(Reaffirmed2006)
Sample Identification	:	8mm, 10mm, 12mm, TMT Fe500 Bars

Sl. No.	**Nominal size dia in mm)**	**Mass per metre (kg/m)**	**TENSILE STRENGTH**		
			0.20% proof stress/yield stress N/mm2	**Tensile strength N/mm2 '**	**Elongation,percent on gauge length**
1	8	0.398	519	654	15
2	10	0.618	530	579	16
3	12	0.889	552	588	17

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Consultant's Representative

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TEJUS

TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	Proposed Use	concrete
Location/Source	At Laboratory	Date of Sampling	19-12-2021
Period of Soaking	24 hours	Date of Testing	20-12-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	652	671	661	
B	Weight of oven - dry sample gm.	643	663	652	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1685	1696	1691	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.657	2.652	2.661	2.657
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.400	1.207	1.380	1.329

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Test Report on Cement

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	20-12-2021
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	97 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	482 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	6 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	29.00%	25 % to 35

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division	
Consultants	TEJUS CONSULTANTS	
Contractor	M/S Benaka Developers and Projects Pvt Ltd	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	12.5 mm down size	Proposed Use	CONCRETE
Sample Location	At Plant	Date of Sampling	19-12-2021
		Date of Testing	20-12-2021

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	549	549	5.49	94.51	90-100
10.0	4539	5088	50.88	49.12	40-85
4.75	4328	9416	94.16	5.84	0-10
Pan	584	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	M/S Benaka Developers and Projects Pvt Ltd	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	19-12-2021
		Date of Testing	20-12-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	269	269	2.69	97.31	95 - 100
10.00 mm	4833	5102	51.02	48.98	25 - 55
4.75 mm	4254	9356	93.56	6.44	0 - 10
Pan	644	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	concrete
Sample Location	At Plant	Date of Sampling	20-12-2021
		Date of Testing	20-12-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	218	218	7.27	92.73	90 - 100
2.36 mm	308	526	17.53	82.47	75 - 100
1.18 mm	426	952	31.73	68.27	55 - 90
0.600 mm	482	1434	47.80	52.20	35 -59
0.300 mm	712	2146	71.53	28.47	8-30
0.150 mm	632	2778	92.60	7.40	0 - 10
Pan	222	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	23-12-2021	30-12-2021	7 days	8.125	22500	307	13.64	13.75
2	23-12-2021	30-12-2021	7 days	8.140	22500	309	13.73	
3	23-12-2021	30-12-2021	7 days	8.150	22500	312	13.87	

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Test Report on Cement

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Date of Sample Tested	06-01-2022
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	108 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	459 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	5 mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.00%	25 % to 35

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TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Name of Work	:	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Consultant	:	Tejus Consultants, Bangalore
Date of Testing	:	05-01-2022
Techinical Reference	:	IS 1786:2008, IS1608:2005, IS1599:1985(Reaffirmed2006)
Sample Identification	:	8mm, 10mm, 12mm, TMT Fe500 Bars

Sl. No.	Nominal size dia in mm)	Mass per metre (kg/m)	TENSILE STRENGTH		
			0.20% proof stress/yield stress N/mm2	Tensile strength N/mm2 '	Elongation,percent on gauge length
1	10	0.618	528	568	16
2	12	0.889	543	585	17

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Consultant's Representative

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (M sand)	Proposed Use	concrete
Location/Source	At Laboratory	Date of Sampling	05-01-2022
Period of Soaking	24 hours	Date of Testing	06-01-2022

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	649	671	657	
B	Weight of oven - dry sample gm.	640	663	648	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1683	1697	1688	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.656	2.663	2.656	2.658
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.406	1.207	1.389	1.334

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	M/S Benaka Developers and Projects Pvt Ltd	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	05-01-2022
		Date of Testing	06-01-2022

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	278	278	2.78	97.22	95 - 100
10.00 mm	4842	5120	51.20	48.80	25 - 55
4.75 mm	4234	9354	93.54	6.46	0 - 10
Pan	646	10000			

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Total Weight:	10000 gms

SIEVE ANALYSIS

Type of Material	**12.5 mm down size**	**Proposed Use**	CONCRETE
Sample Location	At Plant	**Date of Sampling**	05-01-2022
		Date of Testing	06-01-2022

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	511	511	5.11	94.89	90-100
10.0	4452	4963	49.63	50.37	40-85
4.75	4563	9526	95.26	4.74	0-10
Pan	474	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	Proposed Use	concrete
Sample Location	At Plant	Date of Sampling	06-01-2022
		Date of Testing	06-01-2022

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	208	208	6.93	93.07	90 - 100
2.36 mm	309	517	17.23	82.77	75 - 100
1.18 mm	415	932	31.07	68.93	55 - 90
0.600 mm	489	1421	47.37	52.63	35 -59
0.300 mm	766	2187	72.90	27.10	8-30
0.150 mm	649	2836	94.53	5.47	0 - 10
Pan	164	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Wall)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	03-01-2022	10-01-2022	7 days	8.139	22500	308	13.69	13.79
2	03-01-2022	10-01-2022	7 days	8.154	22500	310	13.78	
3	03-01-2022	10-01-2022	7 days	8.164	22500	313	13.91	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Deck Slab)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	08-01-2022	15-01-2022	7 days	8.126	22500	308	13.69	13.64
2	08-01-2022	15-01-2022	7 days	8.140	22500	307	13.64	
3	08-01-2022	15-01-2022	7 days	8.138	22500	306	13.60	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	23-12-2021	20-01-2022	28 days	8.136	22500	496	22.04	22.16
2	23-12-2021	20-01-2022	28 days	8.125	22500	498	22.13	
3	23-12-2021	20-01-2022	28 days	8.148	22500	502	22.31	

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	21-01-2022
Sample Location	At plant	Date of Testing	21-01-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	396.00	392.00	371.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	307.00	295.00	290.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	97.00	90.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.49	24.74	24.26	
5	Average Aggregate impact value	(%)	24.50			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	21-01-2022
		Date of Testing	21-01-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	824	79	923	69
16.0	12.5	1333	133	1224	113
12.5	10.0	522	71	442	59
10.0	6.3	466	58	434	63
Total		**3145**	**341**	**3023**	**304**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.84
Elongation Index(%):	10.06
Combined FI+EL (%)	20.90

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DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	23-01-2022			
Type of Mix :	Tack coat			
Sample I/D :	1			
Location	9th cross Rd(Prakruthinagar)			
Determination	Unit	Test No		
		1	2	3
Location	Chainage	@86	@153	@257
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.778	0.765	0.792
Final weight of plate after application of tack Coat (c)	Kg	0.801	0.788	0.815
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	23-01-2022
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	951	920
2. Weight of Mixture after extraction, g	901	872
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	50.00
8. Bitumen content in %	5.43	5.43
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	9th Cross Road(Prakruthi nagar)	Date of Sampling:	23-01-2022
Type of material & Purpose:	BC	Date of testing:	23-01-2022
		Oven Dry Wt.(gms)	901.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	82	82.0	9.10	90.90	79 - 100
9.50	122	204.0	22.64	77.36	71 - 95
4.75	133	337.0	37.40	62.60	53 - 71
2.360	105	442.0	49.06	50.94	42 - 58
1.180	104	546.0	60.60	39.40	34 - 48
0.600	82	628.0	69.70	30.30	26 - 38
0.300	84	712.0	79.02	20.98	18 - 28
0.150	63	775.0	86.02	13.98	12 - 20
0.075	75	850.0	94.34	5.66	4 - 10
Pan	51.0				
Total	901.0				

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Wall)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	03-01-2022	31-01-2022	28days	8.132	22500	491	21.82	22.03
2	03-01-2022	31-01-2022	28days	8.142	22500	496	22.04	
3	03-01-2022	31-01-2022	28days	8.144	22500	500	22.22	

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	02-02-2022
Sample Location	At plant	Date of Testing	02-02-2022

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	389.00	358.00	348.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	291.00	268.00	261.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	98.00	90.00	87.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.19	25.14	25.00	
5	Average Aggregate impact value	(%)	25.11			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-26

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	02-02-2022
		Date of Testing	02-02-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	822	77	925	70
16.0	12.5	1334	134	1232	115
12.5	10.0	526	70	445	54
10.0	6.3	460	52	432	65
Total		**3142**	**333**	**3034**	**304**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.60	
Elongation Index(%):	10.02	
Combined FI+EL (%)	20.62	

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DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	04-02-2022			
Type of Mix :	Tack coat			
Sample I/D :	2			
Location	5th & 6th C cross Rd(Prakruthinagar)			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@33**	**@88**	**@49**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.751	0.783	0.806
Final weight of plate after application of tack Coat (c)	Kg	0.774	0.806	0.829
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	04-02-2022
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	959	967
2. Weight of Mixture after extraction, g	908	916
3. Weight of Bitumen	51	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	53.00
8. Bitumen content in %	5.48	5.48
9. Average Bitumen content in %	5.48	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	5th & 6th C Cross Road(Prakruthi nagar)	Date of Sampling:	04-02-2022
Type of material & Purpose:	BC	Date of testing:	04-02-2022
		Oven Dry Wt.(gms):	908.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	81	81.0	8.92	91.08	79 - 100
9.50	105	186.0	20.48	79.52	71 - 95
4.75	136	322.0	35.46	64.54	53 - 71
2.360	128	450.0	49.56	50.44	42 - 58
1.180	103	553.0	60.90	39.10	34 - 48
0.600	75	628.0	69.16	30.84	26 - 38
0.300	80	708.0	77.97	22.03	18 - 28
0.150	71	779.0	85.79	14.21	12 - 20
0.075	73	852.0	93.83	6.17	4 - 10
Pan	56.0				
Total	908.0				

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads and drains at Kogilu and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Thirumenahalli Main Road (For Culvert Deck Slab)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	08-01-2022	05-02-2022	28days	8.167	22500	498	22.13	22.24
2	08-01-2022	05-02-2022	28days	8.142	22500	500	22.22	
3	08-01-2022	05-02-2022	28days	8.148	22500	503	22.36	

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BRUHAT BANGALORE MAHANAGARA PALIKE
BYTARAYANPURA DIVISION

Name of Work: Package 2 Consists of 3 Works of Rs.1100.00 Lakhs

2. Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division.

TEST REPORTS

THIRD & PART BILL

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	24-12-2021
Sample Location	At plant	Date of Testing	24-12-2021

Sl. No.	Description		Test No.			Spec Limit (%)
			1	2	3	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	385.00	369.00	348.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	304.00	274.00	287.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	97.00	95.00	90.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.19	25.75	25.86	
5	Average Aggregate impact value	(%)	25.60			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	24-12-2021
		Date of Testing	24-12-2021

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	823	79	926	69
16.0	12.5	1335	136	1235	114
12.5	10.0	520	72	446	56
10.0	6.3	465	54	436	66
Total		**3143**	**341**	**3043**	**305**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.85
Elongation Index(%):	10.02
Combined FI+EL (%)	20.87

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	26-12-2021
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	948	918
2. Weight of Mixture after extraction, g	898	870
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	50.00
8. Bitumen content in %	5.44	5.45
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	6th & 7th c/s Rd MS nagara	Date of Sampling:	26-12-2021
Type of material & Purpose:	BC	Date of testing:	26-12-2021
		Oven Dry Wt.(gms):	898.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	82	79.0	8.80	91.20	79 - 100
9.50	127	206.0	22.94	77.06	71 - 95
4.75	134	340.0	37.86	62.14	53 - 71
2.360	116	456.0	50.78	49.22	42 - 58
1.180	104	560.0	62.36	37.64	34 - 48
0.600	82	642.0	71.49	28.51	26 - 38
0.300	84	726.0	80.85	19.15	18 - 28
0.150	63	789.0	87.86	12.14	12 - 20
0.075	75	864.0	96.21	3.79	4 - 10
Pan	34.0				
Total	898.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	26-12-2021			
Type of Mix :	Tack coat			
Sample I/D :	1			
Location	6th & 7th c/s Rd MS nagara			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@35**	**@122**	**@89(7th c/s)**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.776	0.777	0.789
Final weight of plate after application of tack Coat (c)	Kg	0.799	0.800	0.812
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-12-2021
Type of Mix :	BC
Sample I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	959	967
2. Weight of Mixture after extraction, g	908	916
3. Weight of Bitumen	51	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	52.60	53.00
8. Bitumen content in %	5.48	5.48
9. Average Bitumen content in %	**5.48**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	1st & 2nd c/s Rd MS nagara	Date of Sampling:	29-12-2021
Type of material & Purpose:	BC	Date of testing:	29-12-2021
		Oven Dry Wt.(gms):	908.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	80	80.0	8.81	91.19	79 - 100
9.50	105	185.0	20.37	79.63	71 - 95
4.75	136	321.0	35.35	64.65	53 - 71
2.360	128	449.0	49.45	50.55	42 - 58
1.180	103	552.0	60.79	39.21	34 - 48
0.600	75	627.0	69.05	30.95	26 - 38
0.300	80	707.0	77.86	22.14	18 - 28
0.150	71	778.0	85.68	14.32	12 - 20
0.075	73	851.0	93.72	6.28	4 - 10
Pan	57.0				
Total	908.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	29-12-2021			
Type of Mix :	Tack coat			
Sample I/D :	2			
Location	1st & 2nd c/s Rd MS nagara			
Determination	**Unit**	**Test No**		
		1	2	3
Location	**Chainage**	@43	@114	@69(2nd c/s)
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.750	0.782	0.802
Final weight of plate after application of tack Coat (c)	Kg	0.773	0.805	0.825
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	Date of Sampling	19-01-2022
Sample Location	At plant	Date of Testing	19-01-2022

Sl. No.	Description		Test No.			Spec Limit (%)
			1	2	3	
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	391.00	358.00	371.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	299.00	275.00	285.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	92.00	83.00	86.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.53	23.18	23.18	
5	Average Aggregate impact value	(%)	23.30			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt.Ltd.

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	19-01-2022
		Date of Testing	19-01-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	823	76	924	72
16.0	12.5	1332	132	1230	116
12.5	10.0	523	71	446	54
10.0	6.3	460	54	434	65
Total		**3138**	**333**	**3034**	**307**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.61
Elongation Index(%):	10.12
Combined FI+EL (%)	20.73

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Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	**Date of Sampling**	**19-01-2022**
Sample Location	At plant	**Date of Testing**	**19-01-2022**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	392.00	375.00	368.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	297.00	285.00	277.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	95.00	90.00	91.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.23	24.00	24.73	
5	Average Aggregate impact value	(%)	24.32			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		DBM		Proposed Use	DBM
Sample Location		At plant		Date of Sampling	19-01-2022
				Date of Testing	19-01-2022
Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7388	675	7035	341
31.5	25.0	4129	245	3620	270
25.0	20.0	2455	250	1086	231
20.0	16.0	1545	320	923	253
16.0	12.5	600	110	451	188
12.5	10.0	490	63	267	79
10.0	6.3	120	72	62	54
Total		16727	1735	13444	1416

Results

Flakiness Index(%):	10.37
Elongation Index(%):	10.53
Combined FI+EL (%)	20.91

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TEJUS
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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	21-01-2022
Type of Mix :	Tack coat
Sample I/D :	3
Location	Connecting Rd to 2nd Mn MS nagara

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@62**	**@157**	**@204**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.792	0.784	0.783
Final weight of plate after application of tack Coat (c)	Kg	0.815	0.807	0.806
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.252	0.250
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	21-01-2022
Type of Mix :	BC
Sample I/D :	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	935	972
2. Weight of Mixture after extraction, g	886	921
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.41	5.45
9. Average Bitumen content in %	5.43	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Connecting Rd to 2nd Mn MS nagara	Date of Sampling:	21-01-2022
Type of material & Purpose:	BC	Date of testing:	21-01-2022
		Oven Dry Wt.(gms):	886.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	81	81.0	9.14	90.86	79 - 100
9.50	111	192.0	21.67	78.33	71 - 95
4.75	131	323.0	36.46	63.54	53 - 71
2.360	109	432.0	48.76	51.24	42 - 58
1.180	107	539.0	60.84	39.16	34 - 48
0.600	80	619.0	69.86	30.14	26 - 38
0.300	74	693.0	78.22	21.78	18 - 28
0.150	61	754.0	85.10	14.90	12 - 20
0.075	70	824.0	93.00	7.00	4 - 10
Pan	62.0				
Total	886.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT				
Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division			
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant :	TEJUS CONSULTANTS, BANGALORE			
Contractor :	Benaka Developers & Project Pvt.Ltd.			
Date of Testing :	21-01-2022			
Type of Mix :	Tack coat			
Sample I/D :	1			
Location :	Agrahara Layout Main Road			
Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@108**	**@284**	**@485**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.760	0.763	0.800
Final weight of plate after application of tack Coat (c)	Kg	0.783	0.786	0.823
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.253	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	21-01-2022
Type of Mix	:	DBM
Sample I/D	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	880	928
2. Weight of Mixture after extraction, g	842	888
3. Weight of Bitumen	38	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	40.00	42.00
8. Bitumen content in %	4.55	4.53
9. Average Bitumen content in %	4.54	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Agrahara layout Mn Rd	Date of Sampling:	21-01-2022
		Date of testing:	21-01-2022
Type of material & Purpose:	DBM	Oven Dry Wt.(gms):	842

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	42.0	42.0	4.99	95.01	90-100
19.00	125.0	167.0	19.83	80.17	71-95
13.20	122.0	289.0	34.32	65.68	56-80
4.750	153.0	442.0	52.49	47.51	38-54
2.360	104.0	546.0	64.85	35.15	28-42
0.300	184.0	730.0	86.70	13.30	7-21
0.075	64.0	794.0	94.30	5.70	2-8
Pan	48.0	842.0			
Total	842.0				

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Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt.Ltd.

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**24-01-2022**
Sample Location	5th Mn Road connected to Agrahara Mn rd	**Date of Testing**	**25-01-2022**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	358.00	367.00	328.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	272.00	278.00	249.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	86.00	89.00	79.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.02	24.25	24.09	
5	Average Aggregate impact value	(%)	24.12			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANT
Contractor	Benaka Developers & Project Pvt.Ltd.

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	5th Mn Road connected to Agrahara Mn rd	**Date of Sampling**	24-01-2022
		Date of Testing	25-01-2022

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	631	89	561	76
16.0	12.5	1127	119	999	125
12.5	10.0	777	65	742	56
10.0	6.3	623	52	574	46
Total		**3158**	**325**	**2876**	**303**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.29
Elongation Index(%):	10.54
Combined FI+EL (%)	20.83

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Name of Work	:	Improvements to roads and drains at Agrahara and surrounding area in Ward No 65 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	25-01-2022
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	5th Mn Road connected to Agrahara Mn rd	Date of Sampling:	24-01-2022
		Date of testing:	25-01-2022
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	387	370	3.70	96.30	95-100
22.4	1798	2168	21.68	78.32	60-80
11.2	2266	4434	44.34	55.66	40-60
4.75	2015.0	6449	64.49	35.51	25-40
2.36	1394.0	7843	78.43	21.57	15-30
0.6	778.0	8621	86.21	13.79	8.0-22.0
0.075	885.0	9506	95.06	4.94	0-8
Pan	494.0	10000			
Total	10000.0				

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Project	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS, BANGALORE	
Contractor	Benaka Developers & Project Pvt.Ltd.	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	27-08-2022	
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	1	2
Chainage	**5th Mn Road connected to Agrahara Mn rd ch:08**	**5th Mn Road connected to Agrahara Mn rd ch:18**
Wt. of wet material from hole (Ww) gms.	5995	5992
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10592	10586
Wt. of sand in hole+ cone (w3) gms.	4408	4414
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3328	3334
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.38	2.37
Moisture meter reading(moisture content)	6.20	6.40
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.24	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.63	98.22
% compaction required	98%	98%

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

Consultant's Representative

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CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	28-01-2022
Type of Mix	:	DBM
Sample I/D	:	DBM-2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	866	957
2. Weight of Mixture after extraction, g	829	915
3. Weight of Bitumen	37	42
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	39.00	44.00
8. Bitumen content in %	4.50	4.60
9. Average Bitumen content in %	4.55	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Agrahara layout Mn Rd	**Date of Sampling:**	28-01-2022
		Date of testing:	28-01-2022
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	829

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	44.0	44.0	5.31	94.69	90-100
19.00	122.0	166.0	20.02	79.98	71-95
13.20	115.0	281.0	33.90	66.10	56-80
4.750	165.0	446.0	53.80	46.20	38-54
2.360	96.0	542.0	65.38	34.62	28-42
0.300	144.0	686.0	82.75	17.25	7-21
0.075	94.0	780.0	94.09	5.91	2-8
Pan	41.0	821.0			
Total	829.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	28-01-2022
Type of Mix :	Tack coat
Sample I/D :	2
Location :	Agrahara Layout Main Road

Determination	**Unit**	**Test No**		
		1	2	3
Loacation	**Chainage**	**@608**	**@845**	**@1008**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	761.000	0.760	0.822
Final weight of plate after application of tack Coat (c)	Kg	761.023	0.783	0.845
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-01-2022
Type of Mix :	BC
Sample I/D :	BC4

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	937	968
2. Weight of Mixture after extraction, g	888	917
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.40	5.48
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Agrahara Layout Main Road	Date of Sampling:	29-01-2022
Type of material & Purpose:	BC	Date of testing:	29-01-2022
		Oven Dry Wt.(gms):	888.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	82	82.0	9.23	90.77	79 - 100
9.50	116	198.0	22.30	77.70	71 - 95
4.75	128	326.0	36.71	63.29	53 - 71
2.360	116	442.0	49.77	50.23	42 - 58
1.180	111	553.0	62.27	37.73	34 - 48
0.600	63	616.0	69.37	30.63	26 - 38
0.300	79	695.0	78.27	21.73	18 - 28
0.150	62	757.0	85.25	14.75	12 - 20
0.075	69	826.0	93.02	6.98	4 - 10
Pan	62.0				
Total	888.0				

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Authorised Signatory

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-01-2022
Type of Mix :	Tack coat
Sample I/D :	4
Location	Agrahara Layout Main Road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@196**	**@389**	**@575**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.837	0.791	0.781
Final weight of plate after application of tack Coat (c)	Kg	0.860	0.814	0.804
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.254	0.253	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-01-2022
Type of Mix :	Tack coat
Sample I/D :	5
Location	Agrahara Layout Main Road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@634**	**@853**	**@1075**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.758	0.768	0.810
Final weight of plate after application of tack Coat (c)	Kg	0.781	0.791	0.833
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Agrahara and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-01-2022
Type of Mix :	BC
Sample I/D :	BC5

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	922	955
2. Weight of Mixture after extraction, g	873	904
3. Weight of Bitumen	49	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	53.00
8. Bitumen content in %	5.49	5.55
9. Average Bitumen content in %	5.52	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Agrahara Layout Main Road	Date of Sampling:	29-01-2022
Type of material & Purpose:	BC	Date of testing:	29-01-2022
		Oven Dry Wt.(gms):	873.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	84	84.0	9.62	90.38	79 - 100
9.50	105	189.0	21.65	78.35	71 - 95
4.75	132	321.0	36.77	63.23	53 - 71
2.360	105	426.0	48.80	51.20	42 - 58
1.180	101	527.0	60.37	39.63	34 - 48
0.600	75	602.0	68.96	31.04	26 - 38
0.300	82	684.0	78.35	21.65	18 - 28
0.150	65	749.0	85.80	14.20	12 - 20
0.075	70	819.0	93.81	6.19	4 - 10
Pan	54.0				
Total	873.0				

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